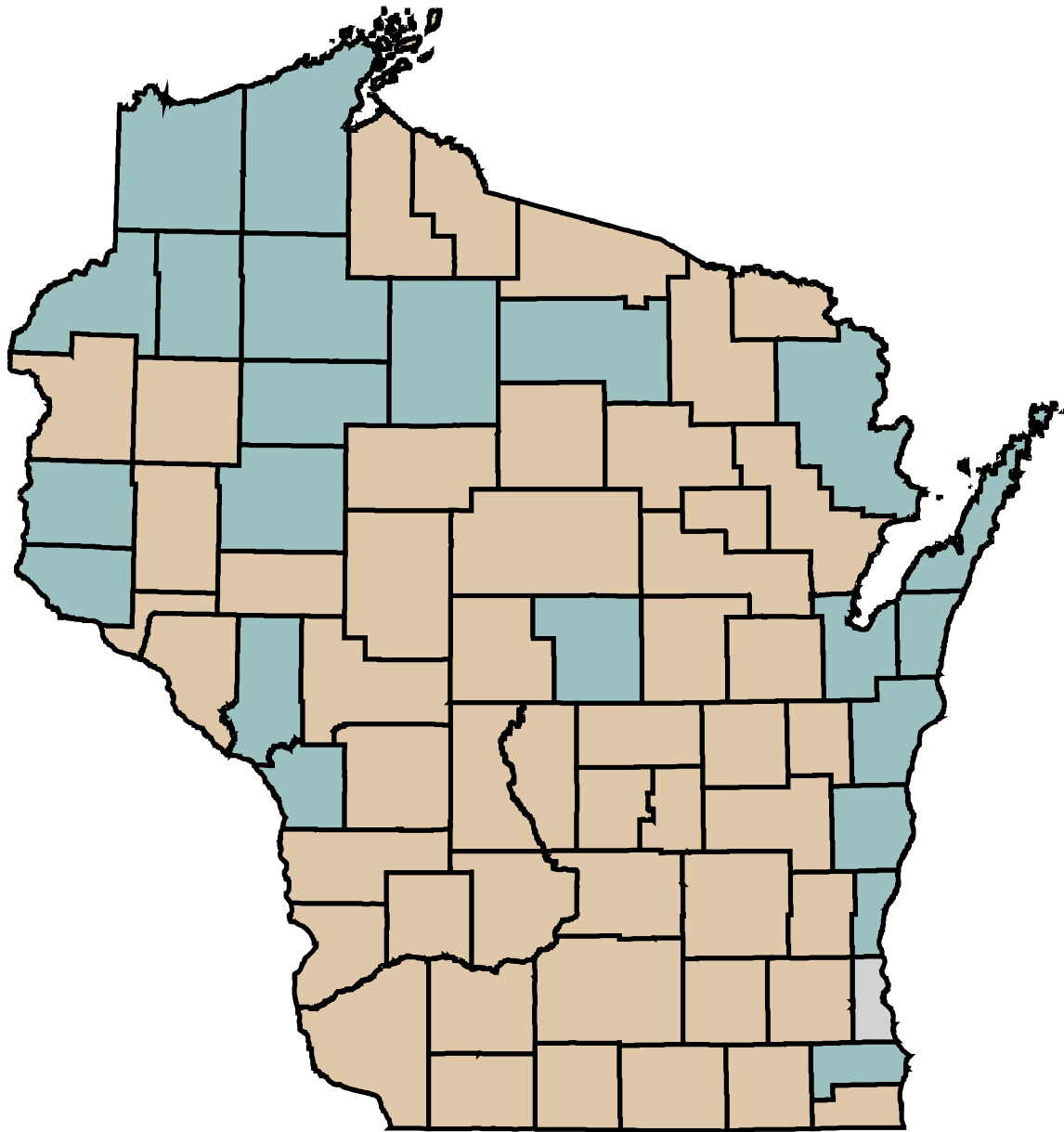


Bluff and Unstable Soil Standards



County is not regulated under NR 115.



County does not have special provisions for protection of bluffs or unstable soils.



County has special provisions for the protection of bluffs and/or unstable soils.

Bluff and Unstable Soil Issue Summary

MANAGEMENT RATIONALE

Shoreline erosion is a natural process, but if it is not respected, this natural process can pose a serious threat to human safety and property. Historically coastal property owners have often relied on traditional treatments to control erosion, such as sea walls, groins and breakwaters. The need for these controls was often only realized after the initial construction of the prized waterfront home.

The monetary investment for, and temporary nature of, traditional erosion controls have led many communities to start utilizing preventative controls. Preventative controls, such as zoning changes, prevent intrusive development into critical shoreline areas, which may inadvertently trigger or speed-up the natural erosion process. Beyond controlling erosion, these preventative measures also preserve property values, minimize the visual impact of built features, preserve native vegetation to minimize erosion and provide corridors for wildlife.

MINIMUM STATEWIDE STANDARDS

There are no special considerations for bluffs or other critical shoreline areas in Chapter NR 115, Wis. Admin. Code. The 75 foot structural setback applies to all shoreland property, regardless of whether the site is flat or on top of a steep bluff.

RELATED RESEARCH

Shoreline erosion is unavoidable on waterfront lots, and it is a serious concern on bluffs and other unstable sites, like sand dunes. A study conducted in northern Racine County found bluff recession rates averaging nearly 6 feet per year, with the one site averaging a loss of 14 feet per year (Racine County Planning and Zoning Department and Southeastern Wisconsin Regional Planning Commission 1982). At rates such as these, even with a 75 foot structural setback, buildings could be in danger in as short as 5 to 10 years.

In order to prevent damage to structures, an increased setback distance is often utilized. This helps to prevent damages resulting from major storms, provides open space, and increases infiltration and drainage of surface water and subsurface water. The increased setback also prevents the weight of structures from being placed too close to the edge of a bluff, which can reduce slope stability. Finally, an increased setback helps to preserve the aesthetic value of the bluff face (Racine County Planning and Zoning Department and Southeastern Wisconsin Regional Planning Commission 1982).

MANAGEMENT INITIATIVES

A common approach is to require deeper structure setbacks in bluff or dune areas. This method has been used many of the Great Lakes counties, as well as with counties with unique natural resources, such as the Lower Wisconsin Riverway, the St. Croix Riverway or the Black River. The structural setback may be simply a set distance from the bluff

face (rather than the ordinary high water mark) or it may be derived from a bluff recession formula.

Another method used to protect these resources is the development of overlay districts or new zoning districts to encompass these resources. Door County has adopted a method similar to an overlay district to protect escarpments, dunes, ridges and swales, and many other important natural features.

Other counties have simply incorporated language into their ordinances designed to recognize and protect these resources. Many counties require avoidance of “environmentally sensitive areas” for placement of buildings and structures. Another option is to require structures, such as stairways, to be elevated above the sensitive areas, minimizing the disturbance and preventing erosion.

CONSIDERATIONS

- What are the goals of regulating steep slopes and unstable soil areas – preventing erosion, limiting property damage, protecting scenic vistas? Does the method of regulation your community is considering or using adequately address those concerns?
- Are the areas of concern largely developed or undeveloped at this time? Will preventive regulations be adequate to protect homes and other buildings?
- Are appropriate measures being taken to minimize slope disturbance – slope stabilization measures, retention or establishment of vegetative cover or appropriate building design?
- Have the specific characteristics of the soil been considered when determining the extent of cutting and filling, the resulting slopes, and stabilization measures?

BIBLIOGRAPHY

Racine County Planning and Zoning Department and Southeastern Wisconsin Regional Planning Commission. 1982. *A Lake Michigan coastal erosion management study for Racine County, Wisconsin.*

Abbreviations used in the following table are:

Construct. = Construction
CUP = Conditional use permit
Environ. = Environmentally
L. = Lake
Mich. = Michigan
Min. = Minimum
OHWM = Ordinary high-water mark

Req. = Require

Req. = Requirements (Door County)

Bluff and Unstable Soil Standards

<i>County</i>	<i>Bluff and Unstable Soil Standard</i>
Adams	Not addressed in county's shoreland zoning ordinance.
Ashland	Not addressed in county's shoreland zoning ordinance.
Barron	Not addressed in county's shoreland zoning ordinance.
Bayfield	Lake Superior req. greater setbacks for active or potential erosion areas. Zoning Committee decides setback based on projected shoreline recession.
Brown	Min. 20' setback from top of ridgeline on 20%+ slopes.
Buffalo	Not addressed in county's shoreland zoning ordinance.
Burnett	Placement of walks, paths, and stairs must be located in VAC unless steep slope/wet soils prohibit it.
Calumet	Not addressed in county's shoreland zoning ordinance.
Chippewa	Stairs & elevated walks permitted, with conditions, if necessary for access due to steep slopes or wet, unstable soils.
Clark	Not addressed in county's shoreland zoning ordinance.
Columbia	Not addressed in county's shoreland zoning ordinance.
Crawford	Not addressed in county's shoreland zoning ordinance.
Dane	Not addressed in county's shoreland zoning ordinance.
Dodge	Not addressed in county's shoreland zoning ordinance.
Door	Natural area req. include escarpements, drumlins, dunes, rockholes, woodlands, ridge & swales complex, and wetlands.
Douglas	Increased setback required for Lake Superior shoreline development based on height and angle of slope.
Dunn	Not addressed in county's shoreland zoning ordinance.
Eau Claire	Not addressed in county's shoreland zoning ordinance.
Florence	Not addressed in county's shoreland zoning ordinance.
Fond du Lac	Not addressed in county's shoreland zoning ordinance.
Forest	Not addressed in county's shoreland zoning ordinance.
Grant	Not addressed in county's shoreland zoning ordinance.
Green	Not addressed in county's shoreland zoning ordinance.
Green Lake	Not addressed in county's shoreland zoning ordinance.
Iowa	Not addressed in county's shoreland zoning ordinance.
Iron	Not addressed in county's shoreland zoning ordinance.
Jackson	Not addressed in county's shoreland zoning ordinance.
Jefferson	Not addressed in county's shoreland zoning ordinance.
Juneau	Not addressed in county's shoreland zoning ordinance.
Kenosha	Not addressed in county's shoreland zoning ordinance.

<i>County</i>	<i>Bluff and Unstable Soil Standard</i>
Kewaunee	On L. Michigan, setback=125' if bluff >10' tall. Elevate stairs, not excavate.
La Crosse	Increased setbacks on Black River, greater of 100' from OHWM or 25' from bluffline.
Lafayette	Not addressed in county's shoreland zoning ordinance.
Langlade	Not addressed in county's shoreland zoning ordinance.
Lincoln	Not addressed in county's shoreland zoning ordinance.
Manitowoc	Elevate stairs rather excavate from erodible soils. Greater setbacks req. if shore receding or bluffs rise 10'+ over 25' horizontal.
Marathon	Not addressed in county's shoreland zoning ordinance.
Marinette	Stairs & lifts req. zoning permit & only allowed if essential to pedestrian access due to steep slopes or rocky, wet or unstable soils.
Marquette	Not addressed in county's shoreland zoning ordinance.
Menominee	Not addressed in county's shoreland zoning ordinance.
Monroe	Not addressed in county's shoreland zoning ordinance.
Oconto	Not addressed in county's shoreland zoning ordinance.
Oneida	CUP required for struct. & walks/stairs in, on or over steep slopes & unstable soils. Any improvements to lot shall avoid envir. sensitive areas.
Outagamie	Not addressed in county's shoreland zoning ordinance.
Ozaukee	On L. Mich. bluffs, a greater setback is assessed based on a formula using bluff characteristics found on-site.
Pepin	Not addressed in county's shoreland zoning ordinance.
Pierce	Kinnickinnic River Blufflands protected w/ min. 300' lot width, 15' setback from bluffs, CUP req. for tree removal & more.
Polk	Not addressed in county's shoreland zoning ordinance.
Portage	Elevate stairs, not excavate.
Price	Pedestrian access permitted on unstable soils if (among other conditions) vegetation stabilizing slope not removed & walkway on piles or footings.
Racine	Lake Michigan shoreland has a Structural Setback Overlay (SSO) and Nonstructural Setback Overlay (NSO) which address bluffline erosion rates.
Richland	Not addressed in county's shoreland zoning ordinance.
Rock	Not addressed in county's shoreland zoning ordinance.
Rusk	Support stairs w/ piles or footings rather than excavate from erodible soils, steep slopes, or bluff faces.
St. Croix	St. Croix Riverway Zoning Ordinance addresses concerns along bluff.
Sauk	Not addressed in county's shoreland zoning ordinance.
Sawyer	Stairs & walkways shall be on pilings or footings and not excavated from erodible soils. Steep slopes or bluff faces.
Shawano	Not addressed in county's shoreland zoning ordinance.
Sheboygan	Greater setbacks on Lake Michigan due to steep bluff & dune recession rates. Elevate access essential stairs rather than excavate.
Taylor	Not addressed in county's shoreland zoning ordinance.

<i>County</i>	<i>Bluff and Unstable Soil Standard</i>
Trempealeau	Black River has 25' setback from bluffline or 100' from OHWM, whichever is greater.
Vernon	Not addressed in county's shoreland zoning ordinance.
Vilas	Not addressed in county's shoreland zoning ordinance.
Walworth	Not addressed in county's shoreland zoning ordinance.
Washburn	Notification req. for any land disturbances over 2000 s.f. Elevated walks/power lifts only if it is min. construct. essential for access due to soil.
Washington	Not addressed in county's shoreland zoning ordinance.
Waukesha	Not addressed in county's shoreland zoning ordinance.
Waupaca	Not addressed in county's shoreland zoning ordinance.
Waushara	Elevate stairs rather than excavate.
Winnebago	Not addressed in county's shoreland zoning ordinance.
Wood	Not addressed in county's shoreland zoning ordinance.

Bluff and Unstable Soil Ordinance Language

BAYFIELD COUNTY

17.07 (1) (b) Lake Superior. A greater setback shall be required from the ordinary high water mark of Lake Superior for areas of active or potential erosion designated on a map titled Erosion Hazard Areas – Bayfield County. Such setback shall be determined by the Zoning Committee or its duly delegated agent, based on project shoreline recession rates.

DOOR COUNTY

CHAPTER 5

NATURAL FEATURES PROTECTION REQUIREMENTS

5.01 Purpose.	5.05 Dunes.	5.09 Shoreland
5.02 Applicability.	5.06 Rockholes.	vegetation.
5.03 Escarpments.	5.07 Woodlands.	5.10 Wetland setbacks.
5.04 Drumlins.	5.08 Ridges and swales complexes.	

5.01 Purpose. These requirements are intended to preserve interesting geological features, protect against soil erosion and groundwater contamination, preserve the natural beauty of Door County, and protect wild flora and fauna.

5.02 Applicability. These requirements shall be in effect in all zoning districts. They shall be applied independently of other applicable requirements of this Ordinance. Wherever other requirements of this Ordinance conflict with requirements of this chapter, the most stringent requirement shall govern.

* * *

5.03 Escarpments.

(1) Purpose. The purpose of these regulations are to:

- (a) Promote safe conditions by preventing placement of roads on highly inclined surfaces.
- (b) Preserve escarpments as landmark features that contribute to the scenic diversity and attractiveness of the county.

(2) Determination. The location of escarpments subject to the requirements of this section shall be determined by reference to a map entitled “*Door County Escarpment Protection Areas*” on file in the office of the Planning Department.

Commentary: Generally, the escarpment protection areas include lengthy slopes of 20% or greater and the areas associated with the crest of the escarpment.

(3) Requirements.

- (a) No roads or driveways shall be placed on slopes of 30 – 39% unless the roads or driveways are placed parallel to the escarpment face. No roads or driveways shall be placed on slopes of 40% or greater.
- (b) The clearing of trees located within the escarpment protection areas shall be permitted for:
 - 1. Building footprints.
 - 2. Sites for wastewater disposal systems.
 - 3. Driveways.
 - 4. The area on a lot extending not more than 25 feet from the exterior walls of principal buildings and 15 feet from accessory buildings.
- (c) In the area on a lot lying between 25 feet and 100 feet from the exterior walls of principal buildings, selective cutting is permitted provided that:
 - 1. No more than 30 percent of this area on the lot shall be cleared.
 - 2. The clearing of the 30 percent described above shall not result in strips of cleared openings of more than 30 feet in any 100-foot wide strip nor create a cleared opening strip greater than 30 feet wide.
 - 3. In the remaining 70 percent of this area, cutting and pruning shall leave sufficient cover to screen vehicles, dwellings, and other structures.
- (d) In the areas on a lot lying more than 100 feet from the exterior walls of principal buildings, and for lots which contain no principal buildings, selective clearing shall be permitted provided that within escarpment protection areas there shall be no cleared area greater than 5,000 square feet, and provided that the shade of the remaining trees over 15 feet in height covers at least 70% of the wooded land surfaces of the lot.
- (e) Pruning of trees is permitted, except that trees shall not be pruned completely clear of branches above a height equal to one half the height of the trees.

- (f) In addition, the woodland located within escarpment protection areas shall also be subject to the requirements of s. 5.07, Woodlands.

* * *

5.05 Dunes.

- (1) Purpose. Dunes are an uncommon Door County landform formed by the dynamic forces of water and wind acting upon the land. The purposes of these regulations are to perpetuate the existence and intactness of the dunes as unique habitat areas and to protect the visual integrity of the dunes.
- (2) Dunes which are at least 20 feet in height are subject to the requirements of this section.
- (3) Determination. The location of dunes shall be determined by reference to a map entitled "*Door County Natural Features Map*" on file in the office of the Planning Department.
- (4) Requirements.
- (a) Dunes shall not be mined, or in any other way removed, in part or in total, except for customary excavation necessary to construct foundations for permitted buildings or for utilities which serve permitted buildings.
- (b) For any lot, the total area of the building footprints of all buildings place on a dune shall not exceed 10% of the surface area of that portion of a dune located on the lot.

KEWAUNEE COUNTY

5.22 LOTS THAT ABUT ON LAKE MICHIGAN

- (1) Finding of fact: Lake Michigan possesses unique ecological characteristics, water level fluctuations and erosion hazards not found on other surface waters in Kewaunee County. Storms and record high Great Lake water levels have caused shoreline erosion, flooding and property damage that posed a threat to the health, safety and general welfare of Kewaunee County; therefore, setbacks from Lake Michigan shall be increased from that for inland waters and Green Bay.
- (2) Required Minimum Setback. The minimum setback for all buildings and structures, except piers, boat hoists, decks and boathouses which may require a lesser setback (see section 5.24 – 5.27) shall be set back at least 75 feet from the

ordinary highwater mark where the shore bluff height is 10 feet or less and 125 feet from the ordinary highwater mark where the shore bluff height is greater than 10 feet.

RUSK COUNTY

5.3 (4) Stairways shall be supported on piles or footings rather than be excavated from erodible soils, steep slopes or a bluff face.

Bluff and Unstable Soils Resources

EDUCATIONAL MATERIALS

Selecting a Safe Setback Distance for Coastal Construction. (On-line document, July 2000). This series of fact sheets provides rationales, advantages, disadvantages and examples of different methods of computing safe setbacks in coastal area. Available on-line at: [http://www.seagrant.wisc.edu/advisory/coastal_engr/setbacks/setbacks.html].

TECHNICAL REFERENCES

Coastal Processes Manual. (unknown, 1998). The manual is written for persons with a professional stake in prudent coastal development on the Great Lakes – bankers, contractors, developers, insurers, realtors, and regulators. It covers how to recognize the risks of flooding and erosion at specific sites along the coast. Available for \$10 from the University of Wisconsin Sea Grant Institute at (608) 263-5133.

Land Form Alteration Policy Guidance. (On-line document, March 1994). This report provides an easily used guide for planning staff and others in how to deal with grading effects from subdivision decisions to lot layout and building design. Attachments to this report provide details on the possible impacts from grading, a review of policy and regulatory approaches to minimize land form alteration and some of the technical options available as alternatives to conventional site grading. Available on-line at [<http://www.coastal.ca.gov/web/landform/title-tc.html>].

Steep Slope Bylaws. (On-line document, August 1999). This module provides examples of steep slope bylaws from ordinances which define a steep slope and restrict certain land uses in the defined area. Steep slope bylaws are used mainly to control erosion, mitigate visual impact of building in scenic areas, and preserve access. Available on-line at [<http://www.massapa.org/aicp/SLOPES/SLOPE.HTM>]

Understanding, Living With, and Controlling Shoreline Erosion: A Guidebook for Shoreline Property Owners. (90 pp., July 1995). Guidebook addresses the issues and concerns associated with shoreline erosion on inland lakes and streams. It covers the impacts of shoreline erosion, methods of controlling erosion, and how to plan an erosion control project. Available from the Tip of the Mitt Watershed Council, PO Box 300, Conway, MI, 49722 or by phoning (616) 347-1181.